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SEQUENCE LISTING

<110> Barany, Francis
Cao, Weiguo
Tong, Jie

<120> HIGH FIDELITY THERMOSTABLE LIGASE AND USES THEREOF

<130> 19603/2615

<140> 09/830,502
<141> 1999-10-29

<150> 60/106,461
<151> 1998-10-30

<150> PCT/US99/25437
<151> 1999-10-29

<160> 20

<170> PatentIn Ver. 2.1

<210> 1
<211> 674
<212> PRT
<213> Thermus sp.

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Ile Arg Tyr His Asn Tyr Leu Tyr Tyr Val Leu Asp Ala Pro Glu Ile
20 25 30

Ser Asp Ala Glu Tyr Asp Arg Leu Leu Arg Glu Leu Lys Glu Leu Glu
35 40 45

Glu Arg Phe Pro Glu Leu Lys Ser Pro Asp Ser Pro Thr Glu Gln Val
50 55 60

Gly Ala Arg Pro Leu Glu Ala Thr Phe Arg Pro Val Arg His Pro Thr
65 70 75 80

Arg Met Tyr Ser Leu Asp Asn Ala Phe Ser Leu Asp Glu Val Arg Ala
85 90 95

Phe Glu Glu Arg Ile Glu Arg Ala Leu Gly Arg Lys Gly Pro Phe Leu

100	105	110
Tyr Thr Val Glu Arg Lys Val Asp Gly Leu Ser Val Asn Leu Tyr Tyr		
115	120	125
Glu Glu Gly Ile Leu Val Phe Gly Ala Thr Arg Gly Asp Gly Glu Thr		
130	135	140
Gly Glu Glu Val Thr Gln Asn Leu Leu Thr Ile Pro Thr Ile Pro Arg		
145	150	155
Arg Leu Thr Gly Val Pro Asp Arg Leu Glu Val Arg Gly Glu Val Tyr		
165	170	175
Met Pro Ile Glu Ala Phe Leu Arg Leu Asn Gln Glu Leu Glu Glu Ala		
180	185	190
Gly Glu Arg Ile Phe Lys Asn Pro Arg Asn Ala Ala Gly Ser Leu		
195	200	205
Arg Gln Lys Asp Pro Arg Val Thr Ala Arg Arg Gly Leu Arg Ala Thr		
210	215	220
Phe Tyr Ala Leu Gly Leu Gly Leu Glu Glu Thr Gly Leu Lys Ser Gln		
225	230	235
240		
His Asp Leu Leu Leu Trp Leu Arg Glu Arg Gly Phe Pro Val Glu His		
245	250	255
Gly Phe Thr Arg Ala Leu Gly Ala Glu Gly Val Glu Glu Val Tyr Gln		
260	265	270
Ala Trp Leu Lys Glu Arg Arg Lys Leu Pro Phe Glu Ala Asp Gly Val		
275	280	285
Val Val Lys Leu Asp Asp Leu Ala Leu Trp Arg Glu Leu Gly Tyr Thr		
290	295	300
Ala Arg Thr Pro Arg Phe Ala Leu Ala Tyr Lys Phe Pro Ala Glu Glu		
305	310	315
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325	330	335
Arg Ile Thr Pro Val Gly Val Leu Glu Pro Val Phe Ile Glu Gly Ser		
340	345	350
Glu Val Ser Arg Val Thr Leu His Asn Glu Ser Phe Ile Glu Glu Leu		

355

360

365

Asp Val Arg Ile Gly Asp Trp Val Leu Val His Lys Ala Gly Gly Val
 370 375 380

Ile Pro Glu Val Leu Arg Val Leu Lys Glu Arg Arg Thr Gly Glu Glu
 385 390 395 400

Lys Pro Ile Ile Trp Pro Glu Asn Cys Pro Glu Cys Gly His Ala Leu
 405 410 415

Ile Lys Glu Gly Lys Val His Arg Cys Pro Asn Pro Leu Cys Pro Ala
 420 425 430

Lys Arg Phe Glu Ala Ile Arg His Tyr Ala Ser Arg Lys Ala Met Asp
 435 440 445

Ile Gln Gly Leu Gly Glu Lys Leu Ile Glu Lys Leu Leu Glu Lys Gly
 450 455 460

Leu Val Arg Asp Val Ala Asp Leu Tyr Arg Leu Lys Lys Glu Asp Leu
 465 470 475 480

Val Asn Leu Glu Arg Met Gly Glu Lys Ser Ala Glu Asn Leu Leu Arg
 485 490 495

Gln Ile Glu Glu Ser Lys Gly Arg Gly Leu Glu Arg Leu Leu Tyr Ala
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Arg Phe Gly His Met Asp Arg Leu Leu Glu Ala Gly Leu Glu Asp Leu
 530 535 540

Leu Glu Val Glu Gly Val Gly Glu Leu Thr Ala Arg Ala Ile Leu Asn
 545 550 555 560

Thr Leu Lys Asp Pro Glu Phe Arg Asp Leu Val Arg Arg Leu Lys Glu
 565 570 575

Ala Gly Val Glu Met Glu Ala Lys Glu Arg Glu Gly Glu Ala Leu Lys
 580 585 590

Gly Leu Thr Phe Val Ile Thr Gly Glu Leu Ser Arg Pro Arg Glu Glu
 595 600 605

Val Lys Ala Leu Leu Arg Arg Leu Gly Ala Lys Val Thr Asp Ser Val

610

615

620

Ser Arg Lys Thr Ser Phe Leu Val Val Gly Glu Asn Pro Gly Ser Lys
625 630 635 640

Leu Glu Lys Ala Arg Ala Leu Gly Val Pro Thr Leu Ser Glu Glu Glu
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Thr Ala

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<212> DNA

<213> Thermus sp.

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<210> 3
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<220>
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<220>
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<222> (5)
<223> s at position 5 can be C or G

<220>
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<220>
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<220>
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<223> y at position 18 can be T or C

<400> 3
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<210> 4

<211> 7
<212> PRT
<213> Artificial Sequence

<220>
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<400> 4
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<210> 5
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<212> DNA
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<220>
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<223> k at position 8 can be G or T

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<210> 8
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<210> 10
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<212> DNA
<213> Artificial Sequence

<220>
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<400> 10 gcgggatccg aggccttgga gaagctctt 29

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<400> 11 aaaaccctgt tccagcgtct gcggtggtgc gtc 33

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<400> 12 atttgtcata gtttgatcct cttagtctggg 30

<210> 13
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<400> 13
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<210> 14
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<220>
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Glu Xaa
20 25 30

Xaa
35 40 45

Xaa
50 55 60

Xaa
65 70 75 80

Xaa
85 90 95

Xaa
100 105 110

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Thr Gly Xaa Xaa Xaa
115 120 125

Xaa
130 135 140

Xaa
145 150 155 160

Xaa Pro Phe Glu Ala
165 170 175

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<210> 16

<211> 187

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<213> Thermus flavus

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Glu Xaa
20 25 30

Xaa
35 40 45

Xaa			
50	55	60	
Xaa			
65	70	75	80
Xaa			
85	90	95	
Xaa			
100	105	110	
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Val Glu Arg Glu Gly			
115	120	125	
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130	135	140	
Xaa			
145	150	155	160
Xaa Pro			
165	170	175	
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<210> 17
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<213> *Thermus filiformis*

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1 5 10 15

Glu Xaa Xaa

20

25

30

Xaa
35 40 45

Xaa
50 55 60

Xaa
65 70 75 80

Xaa
85 90 95

Xaa
100 105 110

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Ser Gly Xaa Xaa Xaa
115 120 125

Xaa
130 135 140

Xaa
145 150 155 160

Xaa Pro Phe Glu Ala
165 170 175

Asp Gly Val Val Val Lys Met Asp
180

<210> 18
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<212> PRT
<213> Thermus filiformis

<220>
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 1 5 10 15

 Glu Xaa
 20 25 30

 Xaa
 35 40 45

 Xaa
 50 55 60

 Xaa
 65 70 75 80

 Xaa
 85 90 95

 Xaa
 100 105 110

 Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Ser Gly Xaa Xaa Xaa
 115 120 125

 Xaa
 130 135 140

 Xaa
 145 150 155 160

 Xaa Pro Phe Glu Ala
 165 170 175

 Asp Gly Val Val Val Lys Leu Asp
 180

<210> 19
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<400> 19

Tyr Thr Val Glu His Lys Val Asp Gly Leu Ser Val Asn Leu Tyr Tyr
 1 5 10 15

Xaa Xaa

65	70	75	80
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Xaa Xaa

100	105	110
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Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Ser Gly Xaa Xaa Xaa
115 120 125

Asp Gly Val Val Val Lys Leu Asp
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<400> 20
Tyr Thr Val Glu His Lys Val Asp Gly Leu Ser Val Asn Leu Tyr Tyr
1 5 10 15

Glu Xaa
20 25 30

Xaa
35 40 45

Xaa
50 55 60

Xaa
65 70 75 80

Xaa
85 90 95

Xaa
100 105 110

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Leu Glu Glu Ser Gly Xaa Xaa Xaa
115 120 125

Xaa
130 135 140

Xaa
145 150 155 160

Xaa Pro Phe Glu Ala
165 170 175

Asp Gly Val Val Val Lys Leu Asp
180